BUTLER (G. R.)

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ITS PATHOLOGICAL CHARACTER AND TREATMENT.

BY

GLENTWORTH R. BUTLER, A. M., M. D.,

BROOKLYN,

Chief of the Second Medical Division, Methodist Episcopal Hospital; Lecturer on Physiology, Public Hygiene, and Nursing, Pratt Institute.

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By GLENTWORTH R. BUTLER, A. M., M. D.,

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CHIEF OF THE SECOND MEDICAL DIVISION, METHODIST EPISCOPAL HOSPITAL; LECTURER ON PHYSIOLOGY, PUBLIC HYGIENE, AND NURSING, PRATT INSTITUTE

In this paper it is proposed to discuss the disease called membranous enteritis, with reference to symptoms, personal cases, pathological character, and treatment.

Membranous enteritis has been recognized as a distinct form of disease only within the past seventy-five years. According to Wales,† although evidences of its existence may be found in medical literature as far back as the second century, Powell, in 1818, first discriminated it from biliary colic. The fact that there are twenty-nine differing synonyms is an evidence of the varying shades of opinion that have existed concerning it.

A careful and extended search of the literature, in connection with a study of the cases to be reported, warrants the following presentation of this disease and its peculiar characteristics:

* Read before the Medical Society of the County of Kings, May 21 1895.

† All references may be found in the bibliography appended to this article.

It is most frequent between the thirtieth and fortieth years, occasionally ceasing at the forty-fifth, as in my eighth (related) case. It has been observed in children of three to twelve years of age (Barrier, Chapin, J. L. Smith, Goodhart, Edwards).

The great majority of cases occur in women. All of Wales's, ninety six of Whitehead's one hundred, and eighty per cent. of Field's were in women.

It appears to be considerably more frequent in this country than in Europe. Strümpell, Vierordt, and German writers in general, speak of it as a rare complication in some cases of chronic intestinal catarrh. The disease generally begins in a subacute manner, although five of my cases gave a history of what was called acute dysentery. Whether its onset is acute or subacute, its subsequent course is chronic. There are more or less persistent symptoms of gastro-intestinal derangement, which differ little from those of ordinary occurrence. The characteristic events are the painful paroxysmal passage of membrane, and a peculiar train of phenomena referable to the nervous system. The paroxysms may occur daily, or at intervals of a month, or at any intermediate period. In one of my cases nearly three months elapsed between successive exacerbations. The pain begins lightly, is referred to the lower abdomen, increases in severity, reaches its acme, and in many cases is relieved by the passage of membrane, after which it gradually declines. The paroxysms may last for a day or a week. The pain itself is colicky, tenesmic, and of a peculiarly sickening character, producing a facies like that which accompanies pressure on a tender ovary. There is almost invariable abdominal tenderness, sometimes great and general, as in Case I, where it simulated peritonitis. It is usually circumscribed in either iliac fossa, especially the left. This abdominal tenderness may be persist-

ent in varying degrees during the continuance of the disease. There may be vesical and uterine tenesmus, and mucous discharges from these organs.

The membranes may be shreddy, ribbon-shaped, cord-like, or may constitute perfect cylindrical casts of the in testine, twenty to sixty centimetres long (Wales). The quantity ranges from a very small amount up to three kilogrammes in one paroxysm. It may be passed with fæcal matter or alone. By stirring and decantation with water separation is readily effected. Chemically the membrane is composed of dense transformed mucus (Osler). Albumin, if present, is but a trace. Microscopically, with low powers, the surface of the membrane shows relatively opaque ridges, outlining relatively translucent pits or depressions. These pits correspond to the follicles of the intestinal mucous membrane, upon which the dense mucus is molded (Edwards). With higher powers, cylindrical epithelium and more or less spherical cells are found (Wales, Clark). These cells have usually undergone granular or fatty de generation, and are not perfect in shape.* Crystals of cholesterin, triple phosphates, and calcium oxalate are also found. Numerous particles of vegetable or animal tissue from the ingesta may occur.

Bacterial investigation has proved negative (Solis-Cohen, S.). Farr and Bennett profess to have found a confervoid growth as the cause of the disease, but their observations have not been confirmed.

The temperature is always normal or subnormal. The general nutrition usually, but not invariably, suffers. Emaciation, anæmia, and loss of strength may occur in varying

* A number of color-analyses (Ehrlich) were made, but without satisfactory results, the greater number of cells being simply masses of granular *débris*. Eosinophilic and neutrophilic granules were relatively numerous.

degrees. Diarrhœa and constipation, hæmorrhoids, rectal prolapse, jaundice, polydipsia, aphthous stomatitis, and furuncular inflammations may coexist with the disease.

The nervous phenomena are peculiar and striking in the extreme. They are practically of invariable occurrence in this disease, although Edwards reports one case in which the mental distress occasioned by the patient's condition was the only symptom referable to the nervous system. Nevertheless, the great preponderance of cases in which the nervous symptoms are prominent, render the exceptions of little value. These nervous phenomena are so varied and numerous, and in my opinion have such an important bearing upon the nature and treatment of this disease, that they will be discussed in connection with its pathological character.

Case I.—M. M., a woman, aged thirty-four years; United States; married; four children. Has passed membrane for four years, at intervals of two to six weeks; began rather abruptly after gradual loss of health, with a pseudo-dysenteric attack. Has an almost constantly tender and painful spot in left iliac region. Abdominal distress begins and gradually increases, reaching its maximum when the membrane is discharged, after which it slowly diminishes. Has occasional attacks of diarrhœa, but is usually constipated, and if constipated is in pain until a movement is secured. Has frequent headaches and neuralgias. Very active mentally. Is thin, pale, and anæmic. Has been treated for uterine disease, and the cervix has been repaired. Examination shows no present disease of the uterus or annexa. On two or three occasions there has been a copious discharge of glairy mucus from the vagina, with a feeling of weight and pelvic tenesmus. Brown hair and light complexion. Under treatment and change of air there is an amelioration of symptoms and an increase of weight.

Case II.—E. M. C., a woman, aged thirty-eight years; single; United States. Always somewhat dyspeptic. Disease began

with several attacks of diarrhœa. Since then, for a period of one year, has had more or less constant bilateral pain in lower abdomen, with frequent exacerbations. Is usually constipated, but with occasional looseness. Has been passing shreds of membrane almost constantly within this period. In the effort to relieve pain the dietary was reduced to a minimum, with consequent emaciation, anæmia, and loss of strength. The passing of membrane was not regarded as of sufficient importance to be mentioned by the patient until specifically inquired after. Dark complexion and hair. Emotional, and easily elated or depressed. Comes of a neurotic family. No pelvic disease. Lower abdominal tenderness not strictly localized. Under treatment for two months and a half by rest, a larger food supply, cod-liver oil, and tonics, the pain comes but seldom; bowels are regular; color and strength have returned to a marked degree.

Case III.—O., a woman, aged thirty-two years; married; United States; no children. Was seen first during an acute attack, supposed to be peritonitis, of which she was reported to have had several sieges. Abdomen exquisitely tender and painful; abdominal muscles voluntarily rigid. Acme of soreness in left iliac fossa. Temperature normal. Pulse rapid and compressible. No vomiting. Moderate headache. Bowels constipated. Appetite fair. General aspect of patient extremely neurotic. Inquiry developed the fact that she had passed mucus for more than a year. She had been treated variously for pelvic disease, but without amelioration. Pelvic examination demonstrated the absence of notable uterine or ovarian disease. Small doses of morphine and a week in bed enabled her to get up and out. Movement of the bowels by enema or mild laxative secured a painless stool, but was followed by greatly increased abdominal distress, lasting from six to twelve hours. This has been the case for some months. This patient is slender, light-haired, brown-eyed. Her mental state alternates between joyousness and slight hypochondriasis; either condition is easily excited. Has frequent headaches, neuralgias, and various paræsthesiæ.

Case IV.—S. P., a woman, aged thirty-five years; married;

United States; one child. General health fair. Easily tired. Occasional headache, neuralgias, and paræsthesiæ. Neurotic temperament. Light complexion. Generally constipated, but has had several attacks of diarrhœa. At intervals of one to two months the constipation becomes more marked, a tender spot develops in the left iliac fossa, and when the bowels are moved a small amount of shreddy membrane is passed, and the pain gradually subsides. In this case a discharge of glairy mucus from the vagina has occurred several times, synchronously with the passage of membrane.

Case V.—A woman, aged twenty-four years; United States; married; no children. Sent from out of town with a diagnosis of "Russian tapeworm." Had been passing almost constantly yellowish, rounded, branched fragments with stools for over a year. On examination these proved to consist of mucus. Is usually constipated, but has attacks of diarrhœa. Suffers much from headache and neuralgia. Is very low-spirited. Light hair and complexion. Considerable loss of flesh and strength. This patient was seen but once, about one year ago. Cod-liver oil, regular daily enemata, and small tri-daily doses of opium were prescribed. I have since heard that after three months of persistence in this course the membrane ceased to appear, and for eight or nine months the patient has been in good health.

Case VI.—R., a woman, aged forty-three years; married; United States; one child. Neurotic heredity. Has had poor health for the past ten years, with frequent attacks of diarrhœa, alternating with constipation. Is dyspeptic, with more or less abdominal pain and uneasiness. Has been passing membrane for several years. Has suffered from menorrhagia, functional ocular symptoms, headaches, and neuralgias. Is thin, anæmic, highly neurotic, with a tendency toward depression of spirits. Is prone to exaggerate her feelings. Eight months ago, after correction of a deviated nasal sæptum and persistent use of rest and tonics, there was great improvement. At present, under strain of social and domestic duties, there is a return of the unpleasant symptoms, probably temporary. Disease not previously recognized.

Case VII.—D. B., a woman, aged thirty-two years; United States; married; three children. Has been in poor health for six or seven years. For the past three years has been passing "worms." On examination these proved to consist of mucus. Has a defective mitral valve, and suffered from pseudo-anginal pain two years ago, following epidemic influenza. Exhibits a large variety of paræsthesiæ, both mental and physical, with neuralgias of facial and intercostal nerves. Has had the cervix repaired without amelioration of symptoms. With roborant mental and physical treatment, and occasional travel, there is marked improvement. Disease not previously recognized.

Case VIII.—M., a woman, aged seventy-two years; United States; married; fertile. This patient was seen for the first time for chronic rheumatism. While obtaining her personal history, it appeared that from about the twenty-fifth to the forty-fifth years of her life she had passed membrane, with periodical pain and distress. Light hair and complexion. Always thin, with a poor digestion and very slim appetite, but very active, mentally and physically.

In this series of cases over thirty uranalyses have been made. The majority showed a high specific gravity, with a plus amount of urea, running in one case to over 46·5 grammes. Six times there were traces of sugar by the indigo-carmine test, once with Fehling's. A trace of albumin was found once. No casts in any case. Urates and phosphates usually increased. In four examinations there were heavy phosphatic deposits. The membranes have been encountered in shreds, in branching cords of irregular thickness, and in a glairy, structureless form. They varied from a transparent clearness to opaque yellow or brown. The tubular and complete cylindrical forms have not been seen. In all cases repeated examinations, both chemical and microscopical, have been made to determine their composition. The material composing them was proved to be mucin, by its viscosity and stickiness,

and by its solubility in limewater and one-per-cent. sodium carbonate solution, from which it may be precipitated by an excess of acetic acid (Halliburton, Hammarsten).

The general characteristics, family history, and temperament of these patients deserve a distinct mention. It is not a coincidence that with one exception all these patients were bright-minded, active women of unusual cultivation, upon whom there were large social and intellectual demands. On close inquiry the family history in all these cases furnishes neurotic affiliations. The sister of one and the brother of a second are markedly neurasthenic. The father of a third suffers from paralysis agitans; her sister is neurasthenic. The sister of a fourth is frequently hysterical, and has had one siege of anæmia and neurasthenia. There is a rather slender thread of insanity in the family of another. With one exception they have light hair and fair complexions.

The contemporaneous discharge of mucus from the intestines and vagina in two cases, and from the intestines and bladder in one case, should be noted. With the vaginal discharges there was pelvic tenesmus, and an actual protrusion of the pelvic floor, so that sitting was painful. Digital examination in one case showed a swollen condition of the pelvic contents, the vaginal canal being bathed in mucus, the uterus low and the cervix soft.

As this disease does not tend toward a fatal result, reported autopsies are extremely rare. Death results only from intercurrent disease. Simpson refers to two autopsies. One is Abercrombie's, in a patient dying of phthisis, who had passed membrane during life. In this case the colonic mucous membrane was covered with numerous vesicles containing clear fluid. The other is Wright's case, in which there was a thick-set, papular eruption on the mu-

cous membrane of the colon and the lower part of the small intestine. Barrier observed some changes in the follicles of the intestine. Laboulbène says that the membrane is deposited first on the summits of the intestinal folds and thence spreads.

The most modern and trustworthy autopsy made is that reported by Edwards, occurring in the service of Osler. The small intestines showed distinct Peyer's patches without ulceration. The ascending portion of the colon presented membranous casts and flakes, closely adherent, and yellowish-white in color, also small pieces of semi-translucent membrane, and some solid, roundish cords, running into a clear, colorless jelly, which was almost structureless, was handled only with the greatest difficulty, and when placed in water became hardly visible. According to the illustration accompanying this report, the membrane lay, as one would expect, in the sulci of the intestinal mucous membrane, and not on the summits of the folds. The point of special pathological importance in this autopsy was the condition of the mucous membrane of the intestine. There was absolutely no evidence of colitis, old or recent. The mucous membrane was perfectly normal. Osler mentions a second similar case.

There are two theories with regard to its true nature: one, that it is a chronic inflammation of the mucous membrane of the colon, and that the accompanying symptoms are secondary to a local process; the other, that it is primarily of neurotic origin, and that the intestinal symptoms are secondary. I desire to maintain the theory of its nervous origin. The following facts are adduced in favor of this view. During their consideration it should be borne in mind, without going into unnecessary detail, that the pathological changes of chronic intestinal catarrh are well known, its symptomatology is familiar, its neurotic

manifestations are scanty, it occurs largely in men, and is an extremely common disease.

With membranous enteritis, eighty to ninety-six per cent. of the cases occur in women, and the largest proportion between the ages of thirty and forty, the time of the greatest demands upon the nervous system. When occurring in men, the subjects are neurasthenic. Its greatest prevalence is in America, the nation of nervously tired women.

I have failed to find many references to family histories in the literature, but my own cases, without an exception, showed neurotic affiliations.

The disease may originate from and always assumes a severer form under depressing influences, mental or physical. S. Solis Cohen's case, in a man, followed a great grief. The analogy to rheumatoid arthritis, a neuropathy, is in this respect very striking.

The symptoms referable to the nervous system are varied and numerous. Among them are hysteria and hysterical stigmata of all kinds: hysterical coma, convulsions, and aphasia; neurasthenia, vertigo, attacks of blue nails and lips, tingling and numbness of hands and feet, acute neuralgias of all parts of the body, pain in the external ear, tender scalp, tinnitus aurium, hyperæsthesia, paræsthesiæ, anæsthesia, temporary defects of vision, morbid alterations of taste, irregular muscular tremors, paresis, paralyses, chorea, catalepsy, amnesic aphasia, mental depression, poor memory, hypochondriasis, and melancholia. Many if not all of these are transient and largely functional in character, in the absence of definitely ascertained lesions. Finally, to these may be added the peculiar paroxysmal pain and tenderness.

When occurring in children, after eliminating simple intestinal catarrh, it is found that the subjects are from

parents whose nervous systems are diseased, or who have suffered from convulsions, hysteria, neuralgia, rheumatism, or insanity. The children themselves have shown convulsions, passionateness, morbid timidity, chorea, or rheumatism.*

The characters of the urine, as results to cause, are frequently those of lithæmic neurasthenia.

The pulse may be normal or persistently rapid. In one case I suspected a beginning exophthalmic goître.

The associated discharges from bladder and vagina point to a cause not localized in the intestine. Uterine or ovarian disease and dysmenorrhœa frequently coexist.

The physiological nerve control of certain secretory processes is well known. As an example in point the salivary glands may be adduced. Stimulation of the facial nerve or the chorda tympani causes a flow of watery saliva from the submaxillary gland. Stimulation of the sympathetic fibres running to the same gland produces a thick saliva rich in mucin.

It is on the pathological side that some striking neuroses referable to the digestive apparatus may be found.

Under this head may be mentioned anorexia nervosa, dyspepsia nervosa, neurasthenia gastrica, gastroxynsis, merycismus, bulimia, acoria, nervous vomiting, and peristaltic unrest. In all of these recognized functional deviations there are various secretory, vaso motor, motor, and sensory phenomena which it is not necessary to discuss in detail. Almost invariably there are also marked hysterical and neurasthenic symptoms referable to the general nervous system.

If the symptoms and course of membranous enteritis are compared with the symptoms and course of the neuro-

* Edwards, W. A. *American Text-book of Diseases of Children*, Starr, editor, p. 470.

ses just mentioned, the resemblances and analogies are so numerous and remarkable that I have felt justified in formulating the pathological character of the disease under discussion as follows:

Membranous enteritis, so called, is not an inflammation, either acute or chronic. It is a secretory neurosis affecting generally the mucous follicles of the colon and their regulating nerves, but sometimes involving the corresponding elements of the small intestine, bladder, uterus, and vagina. There are correlated sensory, vaso-motor, and motor disturbances. It constitutes a comparatively rare local manifestation of a general neurosis, usually hysteria or neurasthenia.

The nerves involved in the local neurosis are, for the small intestine, the superior mesenteric plexus; for the large intestine, the inferior mesenteric and inferior hypogastric plexuses; for the uterus, vagina, and bladder, the inferior hypogastric plexus. Their respective spinal nerve connections should be remembered. It will be seen that, owing to the anatomical conditions of nerve supply, the uterus and bladder may readily participate in any disturbance of innervation of the colon.

The fact that the mucous follicles of the large intestine are much more numerous than those of the small intestine, are longer, and contain ten times the number of goblet cells, will probably account for the fact that the mucous casts are found mainly in the colon. Paroxysms of pain may occur without the passage of shreds, and the discharge of shreds may continue for some days after the pain has subsided.

The factors determining the onset of the abdominal manifestations are stated variously. Among them are exposure to wet and cold, bad food, fæcal impaction, the injudicious use of cathartics, ovarian disease and dysmenor-

rhœa in women and prostatic disease in men, dysentery, diarrhœa, habitual constipation, abdominal cancer, pyloric obstruction, proctitis, hæmorrhoids, typhoid fever, pertussis, enteralgia, erysipelas, and tuberculosis of the intestines. This lack of uniformity demonstrates that a special determining cause can not be assigned.

The chief ætiological factor I believe to be a congenitally deficient nervous system. In my own cases the dysenteric and diarrhœal attacks which are noted in each instance were without question the initial symptoms and not the cause of the disease.

The diagnosis is of interest. I am persuaded that the existence of this disease is not infrequently overlooked. DaCosta's rule is good and practical, to suspect this disease "in every case of anomalous nervous symptoms, particularly hysterical, in which there is abdominal pain." Membrane, if found, must be discriminated from ascaris lumbricoides and the varieties of tænia, fatty discharges, undigested portions of vegetable food, arteries, ligaments, fibrous and elastic tissues of meat, sausage skins, necrosed mucous membrane, fibrinous and diphtheritic shreds, and anal fissure with hypersecretion.

The outlook for permanent recovery is not good. Nevertheless, if I may trust the results in my own cases, the prognosis, with appropriate and judicious treatment, is not so gloomy as it is usually stated to be.

The therapeutic recommendations by various writers are many. Among them are enemata of water, warm or cold, containing nitric acid, nitrate of silver, sodium or potassium hydrate, limewater, starch and laudanum, saponaria or taraxacum; applications to the mucous membrane of the rectum, through the endoscopic tube, of silver nitrate, zinc sulphate, carbolic acid, and tincture of iodine. Externally, hydrotherapy, electricity, hot fomentations,

with nitrohydrochloric acid, mustard, blisters, and thermocautery. Internally, irrigation of the stomach, opium, Dover's powder, morphine, belladonna, hyoscyamus, arsenic, copaiba, cubebs, pitch and tar pills, turpentine, bismuth; nitric, hydrochloric, nitrohydrochloric, and hydrocyanic acids; various preparations of iron, silver oxide and nitrate, ammonium chloride, mild and corrosive chlorides of mercury, sulphate and oxide of zinc, nux vomica and strychnine; potassium bromide, chlorate, hydrate, and iodide; sodium bicarbonate and hydrate, infusion of gentian and senna, hydronaphthol, naphthaline, salol, creolin, salicylates, resorcin, magnesium carbonate, ipecac, asafœtida, camphor monobromide, cannabis indica, phenacetin, gold, sublimed sulphur, myrrh, podophyllin, aloes, ergot, quinine, serpentaria, Carlsbad and other mineral waters, and cod-liver oil.

The treatment of personal cases has been based upon the theory of the neurotic pathogenesis of the disease, and more attention has been paid to the general than to the local conditions. The mode of life has been minutely regulated. Daily work of whatever kind has been lessened, daily rest insisted upon, sources of worry diminished, and outdoor exercise prescribed under proper restrictions. A moderate amount of abdominal pain and soreness is not a contraindication. The bicycle has proved very beneficial in two cases. Proper clothing has been adopted when possible. The dietary in almost all cases has been too limited, in one case to the starvation point, because of the fancied dependence of the abdominal symptoms upon the ingestion of food. A much more liberal supply of properly prepared meat, eggs, milk, and fats has in each case been assimilated without increased discomfort, and with very beneficial results in color, weight, and strength.

Cream, olive oil, cod-liver oil, and proteinol have

proved very useful in this connection. For the relief of the painful paroxysmal attacks opium, and especially codeine, are very serviceable. In the intervals great improvement has been obtained by the use of one thirtieth of a grain of strychnine and ten to twenty minims of dilute nitrohydrochloric acid, five to fifteen grains of ferratin, two grains of ferrum redactum, ten to fifteen grains of carbonate of iron, one tenth of a grain of zinci phosphis, wine of coca, and malt extracts. One thirtieth of a grain of corrosive sublimate and one tenth of a grain of chloride of gold and sodium have at times done good service. These may be given singly or in various combinations, twice or thrice daily. Intercurrent or coexisting digestive complications, not obviously a part of the disease, were handled in the usual manner. The constipation is sometimes relieved by the general treatment. If not, enemata, plain or containing fifteen to twenty drops of nitric acid to the quart, should be employed. There is frequently a curious and painful intolerance of enemata in this disease. In such cases the mildest laxatives should be employed, as the compound rhubarb pill, rhubarb and soda, or tablets containing cascara, hydrastinine, soda, and belladonna.

As a means of preventing peripheral irritation of the nerve filaments of the intestine by putrefactive material, I have found the occasional use of tablets containing bismuth salicylate, salol, and charcoal, or other intestinal antiseptics, alone or in combination, to be very satisfactory. In cases attended spasmodically or continuously with hypochondriacal or melancholic symptoms, I have found extract of cannabis indica, a quarter of a grain every two to four hours, of much service in producing mental ease and consequent physical improvement. At times in such cases, codeine, a quarter of a grain, or the sulphate of morphine, one twentieth to one sixteenth of a grain, three times a

day, will secure results which nothing else will give. Avoidance of the opium habit may be secured by personal dispensing in tablet form. Constipation will be at first increased, but is temporary.

The morale of the patient should be improved by every possible means, although in two of my cases the "faith cure" had been employed previous to my attendance. The results of the treatment have been quite satisfactory. In one case there is at least a temporary recovery; in four, very marked amelioration in the frequency and severity of the attacks; in one, moderate improvement, and in one there is no change for the better, but it is an out-of-town case and is seen only at long intervals. The related case ceased spontaneously at about forty-five years of age.

Bibliography.

Abercrombie. *Inflammatory Affections of the Mucous Membrane of the Intestines*, pp. 213–279.

Allchin, W. H. Quain's *Dictionary of Medicine*, 9th edition, p. 709.

Aretaeus. Lib. ii, cap. ix.

Barrier. *Traité pratique des maladies de l'enfance*, tome ii, p. 36, 2d ed., 1845.

Bartholow. *Practice of Medicine.*

Bauer. De molis intestinorum, in Haller's *Disputationis ad morborum*, Dresdæ, 1747, p. 463.

Beale. *Microscope in Medicine*, p. 194.

Belfield. *Journal of the American Medical Association*, 1887, viii, p. 303.

Bennett, J. H. *Practice of Medicine*, 1866.

Blondeau. Méthode de traitement d'une espèce de diarrhée dite pseudo-membraneuse. *Journal de méd. de Paris*, 1886, xi, pp. 168–177.

Boardman. Pseudo-membranous Enteritis. *Boston Medical and Surgical Journal*, 1881, p. 514; also 1883, p. 516.

Boyd. *Transactions of the Royal Academy of Medicine in Ireland*, Dublin, 1885, vol. iii, pp. 308–310.

Brandt. A Case of Diarrhœa Tubularis. *Medical Record*, 1882, xii, pp. 33–36. *Bulletin of the New York Pathological Society*, 1881, 2 s., i, p. 67.

Bristowe. Reynolds's *System of Medicine.*

Bristowe, J. S., and Harley, G. Fibrinous Concretions from the Intestines. *Transactions of the Pathological Society of London*, 1859–'60, xi, p. 92.

Broca, P. Fragments de membrane souvent rendus par l'anus. *Bull. Soc. anat. de Par.*, 1854, xxix.

Brookhouse. *Lancet*, London, 1882, ii, p. 216.

Bruner, W. De l'entérite membraneuse. *Rev. de méd.*, Paris, 1892, xii, pp. 733–740.

Burroughs, G. M. An Account of a Peculiar Substance Voided by Stool, with a Chemical Examination of its Properties. *Lond. Med., Surg., and Pharm. Reposit.*, 1814, i, pp. 374–378.

Barrows. *British Medical Journal*, 1871, i, p. 143.

Chapin. *Archives of Pædiatrics*, 1884, i, pp. 447–449.

Claret and Lagillardaie. Observations de concrétions fibreuses intestinales. (Rap. de Guibourt et discussion.) *Bull. de l'Acad. de méd.*, Paris, 1852–'53, xviii, pp. 329–339.

Clark and Wilks. *Transactions of the Pathological Society of London*, ix, p. 230.

Clemens. Ueber den Darmkrup der Kinder. *Jahrb. für Kinderkrankheiten*, 1860, Bd. xxxiv, p. 30.

Cohen, S. Solis. Two Cases of Membranous Enteritis. *Medical News*, Philadelphia, 1893, lxii, pp. 156–158.

Colvis. Concrétions muqueuses membraniformes de l'intestin. *Union méd.*, Paris, 1859, 3 s., vii, pp. 481–489.

Colvis. *L'Union méd.*, 1878, 3me ser., tome xxv, p. 90.

Committee on Morbid Growths. *Transactions of the Philadelphia Pathological Society*, 1876–'77.

Copeland. *Dictionary of Practical Medicine.* Article, Inflammation of the Intestines.

Cumming. *London Medical Gazette*, 3 s., ix.

De Chaille, H. M. Note pour servir à l'histoire de l'entérite pseudo-membraneuse. *Union méd.*, Paris, 1868, 3 s., v, pp. 909–912.

De Courval, A Note pour servir à l'étude des concrétions

muqueuses membraniformes de l'intestin. *Union méd.*, 1869, 3 s., vii, p. 481.

De Wet, P. C. Membranous Enteritis. Obstructive Jaundice. *British Medical Journal*, London, 1893, i, p. 1109.

Doe, O. W. A Case of Pseudo-membranous Enteritis. *Boston Medical and Surgical Journal*, 1885, cxii, pp. 469–471.

Dunhill. *Transactions of the London Pathological Society*, ix, p. 188.

Dürr. Ueber den Abgang häutiger, zum Theil cylinderförmiger Massen durch den Stuhl von gichtischer Ursache. *Allg. med. Ann.*, Altenb., 1813, pp. 256–259.

Editorial. *British Medical Journal*, 1887, p. 390.

Edwards, W. A. Membranous Enteritis, with Cases and Post-mortem Records. *American Journal of the Medical Sciences*, Philadelphia, 1888, n. s., xcv, pp. 329–340; also *Medical News*, Philadelphia, August 7, 1886; also *American Text-book of the Diseases of Children*. Article, Mucous Disease. Philadelphia, 1894, p. 470.

Farre. *Transactions of the Microscopical Society of London*

Field, James B. *Membranous Enteritis*. Providence, 1887. Kellogg Printing Company, p. 57, 5 tables, 8vo.

Findley, W. M. Membranous Enteritis. *Am. Jour. of the Med. Sci.*, Philadelphia, 1875, cxxxvii, pp. 103–107.

Fish, W. H. Membranous Enteritis. *Med. and Surg. Reporter*, Philadelphia, 1880, vii, pp. 257–260.

Friedlaender, M. *De tubulorum et membranarum e tubo intestinali dejectione.* 8vo, Berolini, 1838.

Gallez, L. Affection des voies digestives de nature douteuse: expulsion par les selles d'un produit membraneux. *Bull. de la Soc. de méd. de Gand*, 1873, xl, pp. 454 (rapport de Boddaeret), 456.

Garcin. Concrétions intestinales membraniformes. *Marseille méd.*, 1878, xv, pp. 18–22.

Golding Bird. *Guy's Hosp. Rep.*, iii, p. 35.

Good. *Study of Medicine*, Philadelphia, i, p. 162.

Goodhart, J. F. Casts from the Intestine. *Trans. of the Path. Soc. of London*, 1872, xxiii, pp. 98–100.

Gourdon, H. *Sur l'entérite pseudo-membraneuse simple*, 4to, 1875.

Grantham, J. Fibrinous Diarrhœa, or Diarrhœa Tubularis of Dr. Good. *London Med. Gaz.*, 1843–'44, xxxiii, p. 307.

Grantham. *Facts and Observations in Medicine and Surgery*, 1849, p. 205.

Gray, Henry. *Anatomy*. Thirteenth English edition.

Griffiths. *Trans. of the Path. Soc.*, Philadelphia, 1886.

Grisolle. *Traité de path. interne*. Grue ed., Paris, 1869, ii, p. 753.

Gross, F. W. *Boston Med. and Surg. Jour.*, 1881, pp. 27–55.

Halliburton, W. D. *Text-book of Chem. Phys. and Path.*, 1891.

Harley. *Trans. of the Path. Soc. of London*, 1859-'60, xi, p. 92.

Hay, T. H. Pseudo-membranous Enteritis. *Med. Age*, Detroit, 1893, xi, pp. 33–36.

Henoch. *Klin. der Unterleibskrankheiten*, p. 668.

Hess, R. J. Membranous Enteritis. *Med. and Surg. Reporter*, Philadelphia, 1880, pp. 356–359.

Heyfelder. *Studien im Gebiete der Heilwissenschaft*, p. 173.

Hoffman. *Med. Ration.*, vol. v.

Homans, Sr. Membrane of Tubular Form, passed *per anum*. *Am. Jour. of the Med. Sci.*, Philadelphia, 1855, xxix, n. s., p. 348.

Huchard, H. Note sur un cas de concrétions muqueuses membraniformes de l'intestin. *La France méd.*, Paris, 1879, xxvi, 34–36; also, *Bull. de la Soc. clin. de Paris* (1878), 1879, ii, pp. 212–216.

Hunt, S. H. Membranous Enteritis. *Trans. of the Med. Soc. of New Jersey*, Newark, 1877, p. 231.

Hutchinson. Tubular Exudation-Casts of the Intestine. *Trans. of the Path. Soc. of London*, 1857-'58, ix, pp. 188–194, 1 pl.

Ikeler, W. M. Membranous Entero-colitis. *Trans. of the Mich. Med. Soc.*, Detroit, 1890, pp. 282–286.

Izoard, Marie-Gustave-Joseph. *Contribution à l'étude de l'entérite muco-membraneuse. Recherches historiques et cliniques.* Paris, 1883, 4to, p. 110.

Jugot. *L'Union méd.*, 1868, t. v, p. 511.

Kaempf. *De infarctu vasorum ventriculi.*

Kilbourne, H. S. A Case of Chronic Membranous Enteritis with Periodical Exacerbations. *Med. Record*, New York, 1888, xxxiii; also, 1888, xxxiii, p. 664.

Kloman, W. C. Mucous Casts of the Intestines. *Phila. Med. Times*, 1871–'72, ii, p. 144.

Krysinski, Stanislaus Dominicus Casimirus. *Enteritis membranacea*, Jena, 1884, A. Neuenhahn, 8vo, p. 42.

Laboulbène. *Recherch. clin. et anat. sur les affect. pseudo-membraneuses*, Paris, 1861.

Laennec. *Bull. de la Soc. anat. de Nantes*, 1883, Paris, 1885, vii, p. 55.

Laget. *Bull. de la Soc. anat. de Paris*, 1875, p. 843.

Lambron. *Bull. de la Soc. anat. de Paris*, 1841, p. 268.

Le Bret. Contribution à l'étude des concrétions membraniformes de l'intestin. *Ann. de dermat. et de syph.*, Paris, 1868–'69, i, pp. 204–207.

Lee. *Philadelphia Med. Times*, 1880, i, p. 631.

Lehmann. *Lehrb. der physiol. Chemie*, Leipsic, 1855.

Lereboullet. *Gaz. hebd.*, 1875, Nos. 32, 33.

Leube. Von Ziemssen's *Cyclopädie*, viii, p. 369.

Light, E. M. Desquamative Enteritis. *Practitioner*, London, 1893, l, pp. 173–180.

Lipman, A. Die Behandlung . . . mit Ausschluss eines Falles von desquamativen Dickdarmcatarrh. *Med. Monatschr.*, New York, 1890, ii, pp. 375–377.

Litten. Demonstration mehrerer Präparate von Enteritis (colitis) membranacea. *Berliner klin. Wochenschr.*, 1888, xxv, p. 592.

Livedey. *L'Union méd.*, 1868.

Longuet. *Rev. de mem. de méd., chir. et phar. mil.*, 1878.

Lyon, G. Traitement de l'entérite muco-membraneuse. *Rev. de thérap. méd.-chirur.*, Paris, 1894, lxi, p. 674; 1895, lxii, p. 7.

Makuna. *Brit. Med. Jour.*, March 11, 1887.

Mathieu, A. Traitement de l'entérite muco-membraneuse. *Gaz. des hôp.*, Paris, 1894, lxvii, pp. 1159–1165.

Monos, E. De l'entérite pseudo-membraneuse et son rôle en gynécologie. *Gaz. de gynécol.*, Paris, 1894, ix, pp. 49–54.

Morgagni. *Thirty-first Epistle.*

Muhlenberg, W. F. A Case of Membranous Enteritis. *Am. Jour. of the Med. Sci.*, Philadelphia, 1878, n. s., lxxv, pp. 146–149.

Muhlenberg. *Trans. of the Path. Soc. of Phila.*, 1876–'77, vol. vii, p. 37.

Nothnagel. *Beiträge zur Physiol. u. Path. des Darmes*, p. 185.

Pepper, W. Chronic Follicular Enteritis. *Med. and Surg. Reporter*, Philadelphia, 1881, xlv, pp. 23–32.

Percival. *Mem. of the Med. Soc. of London*, 1789, ii, p. 60.

Perroud. Notes sur les concrétions muqueuses membraniformes dans les intestins. *Mém. et comptes-rendus de la Soc. des sci. méd. de Lyon*, 1864, 1865, iv, pp. 44–53.

Poignard, E. *Étude clinique sur les concrétions muqueuses membraniformes de l'intestin*, 4to, Paris, 1875.

Powell. *Trans. of the College of Phys.*, London, vi, p. 106.

Potain. Matière mucoso-gélatiniforme expulsée par l'intestin pendant la défécation. *Bull. de la Soc. anat. de Paris*, 1857, xxxii, pp. 163–170.

Rambeaud, L. De l'entérite muco-membraneuse. *Jour. de la santé publique*, Paris, 1884, No. 52, p. 7.

Raynaud. Entérite pseudo-membraneuse. *Bull. de la Soc. anat. de Paris*, 1874, lxix, p. 250.

Recueil de mémoires de médecine, de chirurgie et de pharmacie militaires, xxxvii, p. 297, 1855.

Richardière, H. L'entérite muco-membraneuse. *Union méd.*, Paris, 1895, 3 s., lix, pp. 1–5.

Rilliet and Barthez. *Traité clin. et prat. des mal. des enfants*, t. i, p. 677, 1853.

Rothmann, M. *Beitrag zur Pathol. der Enteritis membranacea.*

Rothmann. *Deutsch. Med.-Zeit.*, No. 53, 1887.

Sandham, W. H. Intestinal Membranous Deposit. *Dublin Quar. Jour. of Med. Sci.*, 1857, xxiii, pp. 478–481.

See, G. De l'entérite mucino-membraneuse et son traitement. *Bull. méd.*, Paris, 1893, vii, pp. 1167–1169; also *Gazz. degli osp.*, Milano, xv, pp. 106–108.

Serres. *Thèse de Paris*, No. 39, 1836.

Simpson. *Obstet. Works.* American ed., p. 279.

Simpson, Edward. *Med. Essays*, v, p. 153, 1752.

Siredey, F. Note pour servir à l'étude des concrétions muqueuses membraniformes de l'intestin. *Bull. et mém. de la Soc. méd. d. hôp. de Paris*, 1868, 1869, v, pp. 66–81; also *Union méd.*, Paris, 1869, vii, pp. 75, 86, 101.

Skerritt. *Brit. Med. Jour.*, 1878, ii, p. 367.

Skerritt. *Lancet*, London, 1879, i, p. 302.

Smith, J. L. *Diseases of Children*, fourth edition, p. 437.

Spindler. *Actis Nat.*, v, p. 483.

Stimson, J. Case of Chronic Diarrhœa accompanied by the Discharge of Some Peculiar Substances. *New Eng. Jour. of Med. and Surg.*, Boston, 1816, v, 341–345.

Theden. *Rémarques et expériences*, vol. ii.

Thevenat. Contribution à l'étude du catarrhe intestinal à mucosités membraniformes. *Union méd.*, Paris, 1883, 3 s., xxxvi, p. 175.

Thompson, W. Abstract of Cases in which Pseudo-membranous Substances have been discharged from the Bowels. *Edin. Med. and Surg. Jour.*, 1836, xlvi, pp. 102–131.

Todd. *Cyc. of Pract. of Med.*, ii, p. 279.

Tracy, J. L. Membranous Enteritis. *Toledo Med. and Surg. Reporter*, 1893, vi, pp. 419–422.

Uhl, M. *De pseudangomorphosi in tubo intestinali*, 8vo, Tubingæ, 1831.

Valleix. *Guide du méd. prat.*, iii, p. 10.

Van Valzah, B. Case of Membranous Enteritis. *Amer. Jour. of the Med. Sci.*, Phila., 1873, n. s., lxvi, pp. 106–109.

Verdries, J. M. De pelliculis, intestinali tunicæ similibus, excretis. *Acad. anat. curios. ephem.*, Francof. et Lips., 1712, cent. i, ii, pp. 177–179.

Viellerme. *Dict. des sci. méd.*, xxxii, 264.

Wales. *Syst. of Med.* (Pepper), ii, p. 763.

Walter, G. *Ein Fall von Enteritis membranacea*, 8vo, Halle a. S., 1885. Cruveilhier. Un cordon muqueux très allongé rendu par un malade après des coliques atroces. *Bull. de la Soc. anat. de Paris*, 1852, p. 186.

Wannebroucq. *Assoc. franç. pour l'avancem. de sci.* (Lisle), 1875, 3e sér., p. 694. *Ibid. Bull. méd. du Nord*, 1863, 2e ser., t. v, p. 215. Note sur l'entérite pseudo-membraneuse. *Ibid.*, pp. 434–437.

Welch, G. T. Membranous Enteritis. *Trans. of the Med. Soc. of New Jersey*, Newark, 1876, pp. 257–264.

Whitehead, W. Mucous Disease. *Brit. Med. Jour.*, London, 1871, i, pp. 143, 166. *Med. and Surg. Reporter.* Manchester Hospital, 1870.

Wilks and Clark. *Trans. of the Path. Soc. of London*, ix, p. 230.

Willard, De F. Membranous Enteritis; Intestinal Casts. *Trans. of the Path. Soc. of Phila.* (1876–'77), 1878, vii, p. 36. *Amer. Jour. of the Med. Sci.*, January, 1878.

Williams, J. Chronic Inflammation of the Intestinal Mucous Membrane attended with Discharges of Lymph, or Chronic Croup of the Intestines. *Dublin Quar. Jour. of Med. Sci.*, 1864; xxxviii, pp. 459–467.

Winslow. *Maryland Med. Jour.*, September 4, 1886, p. 361.

Wood. *Pract. of Med.*, sixth edition, 1866, i, pp. 708, 709.

Worms. *Bull. de la Soc. anat. de Paris*, 1863, p. 117.

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